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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,137	01/21/2004	Ken Nakahara	88519.0002	6402

26021 7590 06/26/2006

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EXAMINER

SOWARD, IDA M

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/763,137	NAKAHARA, KEN	
	Examiner	Art Unit	
	Ida M. Soward	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 is/are allowed.
- 6) ☒ Claim(s) 7,9 and 11 is/are rejected.
- 7) ☒ Claim(s) 8,10 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Applicant's remarks filed February 28, 2006.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadota (US 20020126719 A1) in view of Sakai (US 2003/0209723 A1).

In regard to claim 7, Kadota teaches a semiconductor light emitting device comprising a light emission layer, consisting of an GaN system semiconductor 45, 46 & 47, which is interposed between an n type GaN system semiconductor layer 44 and a p type GaN system semiconductor layer 48, wherein there is provided a B-doped ZnO electrode film when $z=0$ in $Mg_zZn_{1-z}O$ ($0 \leq z < 1$) (Figure 5, pages 2-3, paragraphs [0035]-[0038]).

In regard to claim 9, Kadota teaches a metal electrode 49, which supplies an electric current to the n type GaN system semiconductor layer, wherein said B-doped ZnO electrode film (when $z=0$ in $Mg_zZn_{1-z}O$ ($0 \leq z < 1$)) is formed between the n type GaN system semiconductor layer 44, and the metal electrode 49.

In regard to claim 11, Kadota teaches a metal electrode 49, which supplies an electric current to the n type GaN system semiconductor layer 44, wherein the metal electrode 49 and the B-doped ZnO electrode film (when $z=0$ in $Mg_zZn_{1-z}O$ ($0 \leq z < 1$)) adjoin each other and the metal electrode 49 and the B-doped ZnO electrode film are arranged so as to be contiguous to the face of the n type GaN system semiconductor layer 44 (Figure 5, pages 2-3, paragraphs [0035]-[0038]).

However, Kadota fails to teach a $Mg_zZn_{1-z}O$ ($0 \leq z < 1$) electrode film disposed on one of a GaN system semiconductor layers.

Sakai teaches a ZnO (when $z=0$) electrode film 21 disposed on one of a GaN system semiconductor layers 18, 16, 14 & 12 (Figure 1, page 2, paragraphs [0017]-[0025]).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor light emitting device structure as taught by Kadota with the light emitting device having a ZnO (when $z=0$) electrode film disposed on one of a GaN system semiconductor layers to improve the light emission efficiency in a GaN-based compound semiconductor device (page 1, paragraph [0009]).

Allowable Subject Matter

Claims 1-6 are allowed.

Claims 8, 10 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed February 28, 2006 have been fully considered but they are not persuasive.

When $z=0$, $Mg_zZn_{1-z}O$ becomes ZnO. ZnO is taught in Kadota (US 2002/0126719 A1) (Figure 5, page 2, paragraph [0035]) and Sakai (US 2003/0209723 A1) (Figure 1, page 2, paragraph [0017]). The ZnO electrode film 43 is disposed on one of the GaN system layers 44 as taught by Kadota (US 2002/0126719 A1) (Figure 5, pages 2-3, paragraphs [0035]-[0038]). On pages 2-3, paragraphs [0033] and [0038] of Kadota (US 2002/0126719 A1) discloses a Group III or V element doped into the ZnO electrode film 43. Boron is a Group III element.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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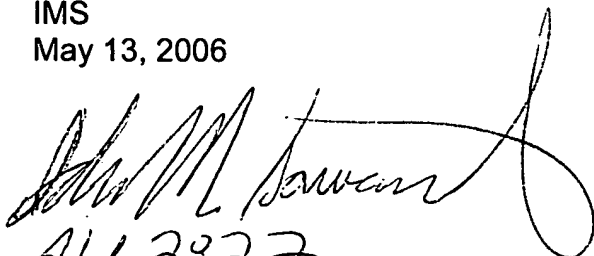
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M. Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IMS
May 13, 2006



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